



## King's Research Portal

### *Document Version*

Publisher's PDF, also known as Version of record

[Link to publication record in King's Research Portal](#)

### *Citation for published version (APA):*

Rogers, M. B., Jones, E., Krieger, K., & Amlot, R. Responding to emergencies involving chemical, biological, radiological and nuclear (CBRN) hazards: Information for members of the public

### **Citing this paper**

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

### **General rights**

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

### **Take down policy**

If you believe that this document breaches copyright please contact [librarypure@kcl.ac.uk](mailto:librarypure@kcl.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.

# Responding to emergencies involving chemical, biological, radiological and nuclear (CBRN) hazards



**Information for members of the public**



**[PRACTICE]**













This booklet contains information about how the Emergency Services respond to Chemical, Biological, Radiological and Nuclear incidents. We call these **CBRN incidents** for short.

It also contains information for members of the public about:

- What CBRN incidents are
- What the emergency services would usually do when there is a CBRN incident
- What you can do, if you are involved in a CBRN incident

**If you are a professional responsible for emergency planning, preparing for and/or responding to contamination events (e.g. emergency services, local authorities, health care, etc.),** please turn to p.22 for detailed guidance about the appropriate use of this manual.

	Who is this booklet for?	4	
	Incidents involving potentially harmful substances	6	
	The emergency response in brief	8	
	CBRN-trained emergency responders	10	
	Evacuation	12	
	Undressing	14	
	Decontamination	16	
	Rest centre	18	
	What can you do during an incident?	20	
	How to use this booklet	22	

## 4 Who is this booklet for and why did we write it?

### **This booklet is for everybody.**

It explains what would happen if you were involved in an emergency where potentially harmful substances (such as chemicals, a disease or radiation) were accidentally or deliberately released.

Such information enables you to better protect yourself and your loved ones.

The incidents described here are extremely rare but the UK is well-prepared to deal with them, should they arise.

It explains the steps that you can take to protect yourself and your loved ones.



## 6 Incidents involving potentially harmful substances

### **CBRN incidents are extremely rare.**

They are harmful incidents that involve Chemical, Biological, Radiological or Nuclear hazards. CBRN substances can be dangerous, especially if you breathe them in or if they get into your eyes.

You could be exposed to them because:

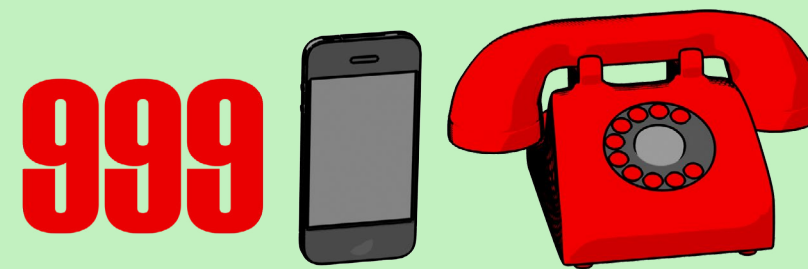
- There has been an accident, for example a radiation or a chemical leak
- Someone has released them on purpose, for example a chemical attack
- There has been an explosion, such as in a terrorist attack

The UK government, emergency services and hospitals are well-prepared and often practice for these types of event.

At the start of an emergency that involves a harmful substance, it might not be obvious that something has happened – clues may include a lot of people feeling unwell without an obvious reason.

If you suspect that you have been exposed to a harmful substance you should follow the advice contained in this booklet.

If you are the first to notice that something is wrong you should raise the alarm and **dial 999**.



## 8 The emergency response in brief

Depending on the nature of the event, **CBRN incidents** can cause contamination which may need to be removed from buildings, your clothing, personal items, and your body.

The way in which the emergency services respond to an incident involving contamination typically follows similar stages.

Understanding these stages will help you to understand what the emergency services might ask you to do, why they will ask you to do it, and what you can do to make the emergency response more efficient and effective.

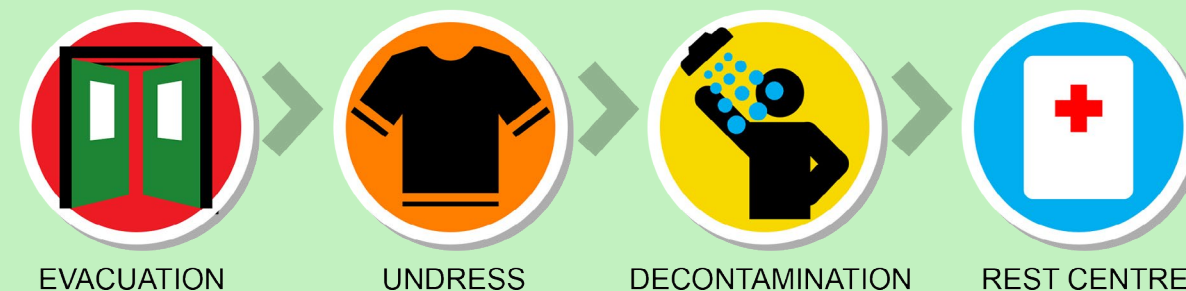
The main stages of the response are shown on the right.

Additional details about each stage can be found later in this booklet.

### **Please be patient during an emergency!**

The emergency services may not always be able to provide you with information immediately. Moving to the next stage in the emergency response may take some time.

**Be assured:** The emergency services will be following well-practised procedures and working hard behind the scenes.



The Police, Fire and Ambulance services all receive training to enable them to respond to CBRN incidents. In addition, all three services have specially trained teams of CBRN responders. These responders wear protective clothing in order to work in areas potentially affected by a CBRN incident. This protective clothing helps them to help you!

**A:** Responders who wear this protective clothing are specially-trained members of the ambulance or fire services. These responders provide medical treatment for the people who have been worst affected.

**B:** This protective clothing could be worn by members of specially-trained ambulance or fire service. Members of the ambulance service wear green helmets and the fire service wear yellow hats. These responders work around fire equipment.

**C&D:** These are police officers. The clothing worn here enables these officers to enter potentially contaminated areas. However, they are more likely to be working with people who will have been moved some distance away from the main hazard. Their role is to support the fire service and ambulance service in the organisation of the response. You will probably notice them supporting people who have been affected by the incident.

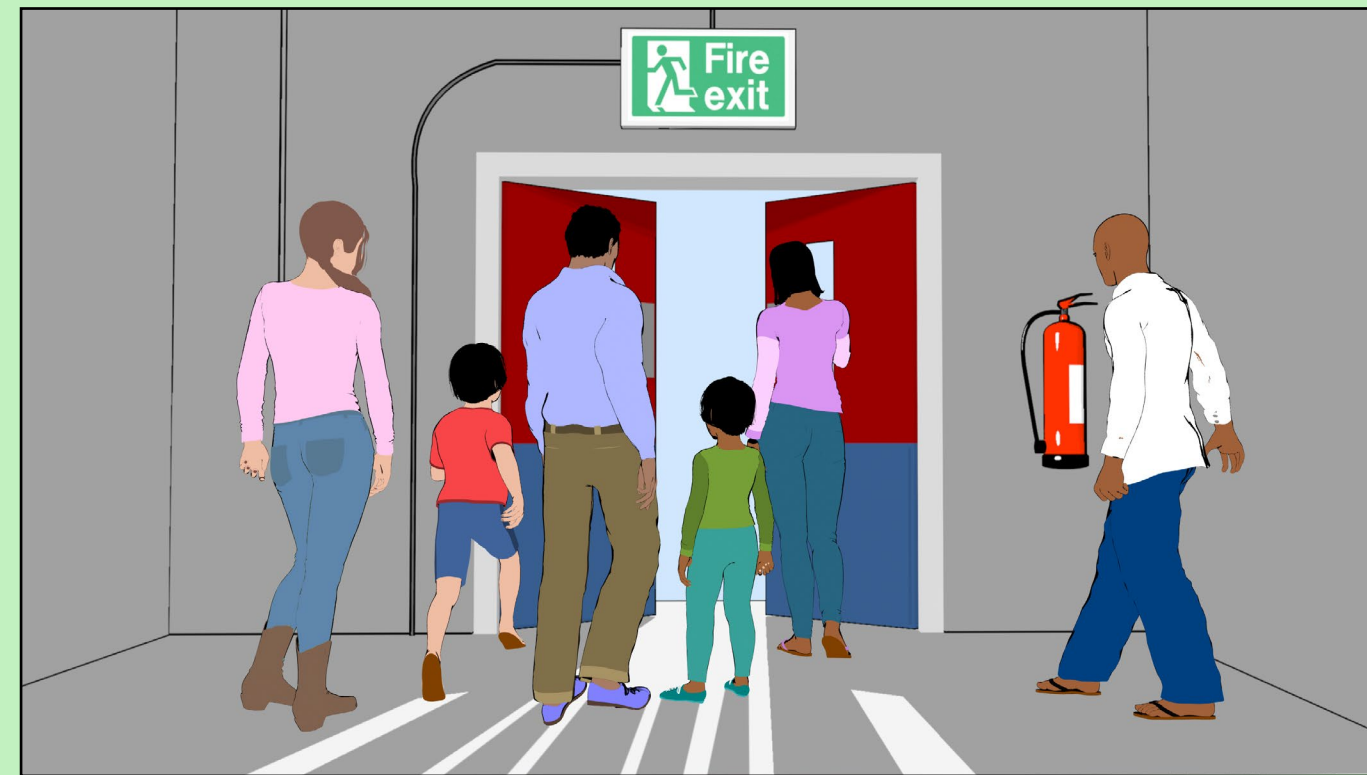
**E:** Responders wearing this protective clothing belong to ambulance and/or fire services. They are responsible for running the decontamination units.





The first stage of the emergency process involves evacuation.

- **When the alarm is raised, you should evacuate the area** – just as you would if there were a fire. In fact, you may not be aware that this evacuation is any different from a fire evacuation or a fire drill. You should walk towards the nearest exit in a calm and orderly manner.
- **It is important that you leave the area of the incident.** Ideally, go outside, or move upwind, and wait for the emergency services to arrive. Do not go home. Do not touch your own face or mouth to minimise the chance of spreading any contaminant.
- **Avoid physical contact with other people** until you have been released by the emergency services. This will help protect you and those around you from cross-contamination.
- It might take a few minutes for the emergency services to arrive. **Even if you feel well, do not be tempted to leave the area until you have been seen by the emergency services.** They will know how best to help you. Leaving the area can put others at risk.





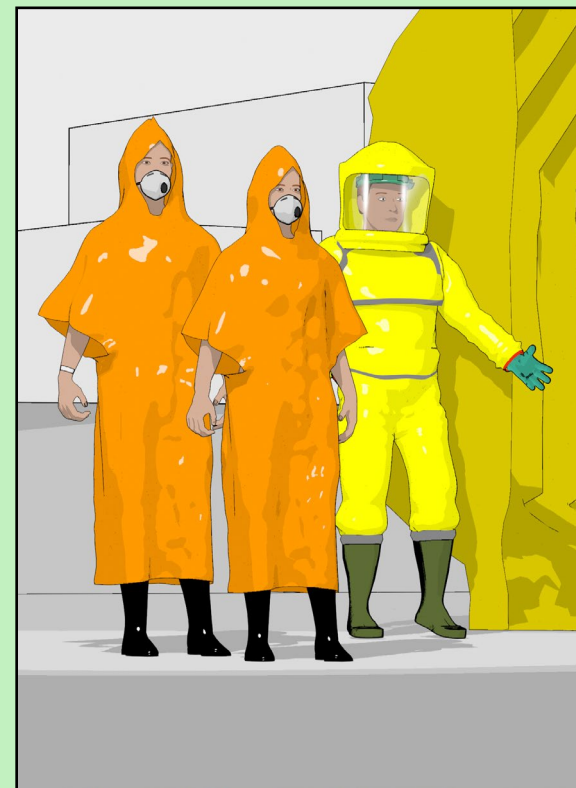
The second stage of the emergency process involves undressing.

- Once the emergency services arrive they might ask you to remove your clothing if contamination is suspected. **Follow the instructions provided by the emergency services even if you do not feel like you have been contaminated.**
- If you have been exposed to a harmful substance, most of it can be removed by taking off your clothing. You must ensure that you **do not remove clothing over your head** in order to avoid contaminating your eyes, nose and mouth.
- If available, '**disrobe packs**' will be provided containing an orange cape.
- **Follow the instructions in the disrobe pack.** Once you have removed your clothes, the orange cape will protect you from the elements and enable the emergency responders to recognise you easily in order to provide assistance.
- **Your clothing and belongings may be contaminated** so they will be sealed in bags that will be taken away by the emergency services. A label will identify you as the owner.
- **Please be patient!** The emergency services will provide regular updates as information becomes available and as the response progresses.
- **Ask for help** if you are unable to follow the instructions.



The third stage of the emergency response process involves decontamination.

- Whilst undressing removes the majority of contaminants, **emergency responders may feel that you need to undergo additional decontamination.**
- Emergency responders will choose the most effective type of decontamination. **This might be a shower (pictured) or involve using dry, absorbent materials.**
- **Wet decontamination** might involve going through a large tent containing showers; going through a large shower created using hosepipes suspended from fire engines; or members of the fire service might use a hose on a low pressure setting as a temporary shower.
- When in the shower, **wash yourself from your head downwards.** Don't forget to clean everywhere and don't scrub too hard.
- **For dry decontamination, emergency responders will ask you to wipe your skin with an absorbent material.** Please follow the instructions offered by the emergency services.
- You will be asked to redress after completing the decontamination process. **Temporary clothing will be provided.** This temporary clothing will help protect you from the elements and enable the emergency responders to recognise where you are in the process in order to provide assistance.



After you have been decontaminated and redressed, **you will be taken to a rest centre where you will have the opportunity to rest, receive refreshments and further care.**

Staff from the local authority and emergency services will:

- Register your arrival, provide assistance and assessments if you require medical care for minor injuries, move you to a hospital for further treatment if required, and help to reunite you with family and loved ones.
- You may be interviewed by the police about what you saw and experienced during the contamination incident.
- The reception centre staff will provide you with information and links to help you keep in touch and ask questions over the coming weeks.





## What can you do during a CBRN incident?

If you are involved a CBRN incident you can do a number of things to protect yourself and your family:

- **Always ask for help if you need it.**
- **Evacuate quickly and calmly**, go somewhere upwind, and uphill if possible.
- **Alert the emergency services** and then wait for them to arrive.
- **Undress, ensuring you protect your face.**
- **Follow instructions from emergency services to decontaminate** – make sure you wash yourself from your head down.

- **Avoid physical contact with others** until the emergency services have released you.
- **Do not leave the scene** until the emergency services advise you to do so.

**Please be patient!** The emergency services may not always be able to provide you with information immediately. Moving to the next stage in the emergency response may take some time.

**Be assured:** The emergency services will be following well-practised procedures and working hard behind the scenes.



**The information contained in this booklet can be used by members of the public and organisations involved in communicating with members of the public**

about emergency situations involving chemical, biological, radiological and nuclear (CBRN) hazards.

**Who is this for?** This booklet contains general information for members of the public to help them understand emergency response procedures.

**For what purpose?** This booklet has been designed to inform people about emergency procedures used during CBRN incidents. If people understand these processes they will be better able to help themselves and their families during a CBRN incident. Research has shown that the emergency response process can be

made more efficient and effective if the emergency services and members of the public work together.

**What is in it?** The information provided improves the public understanding of:

- Rare but potentially harmful incidents involving CBRN hazards
- The stages of a typical CBRN response
- Which emergency response organisations would typically get involved in a CBRN response

**How to use it?** This booklet can be distributed to households, GP surgeries, and more in hard copy. It can also be displayed on the websites of emergency response organisations, local authorities, and other institutions.

**When to use it?** This booklet is principally designed to educate the public before an incident occurs. However, parts of it may be used and adapted to inform the members of the public during an incident.

**An additional information booklet for emergency response organisations is also available.** The responder booklet provides additional information about what, how and why to communicate with members of the public.

**Important disclaimer:** The information contained in this booklet is currently UK-specific. **Please note that it is important to adapt it to your local cultural and institutional environment.**

**Authors:** M. Brooke Rogers, Emma Jones, Kristian Krieger and Richard Amlôt (October 2014)

**Questions?**

Additional information about the information contained within this booklet can be found on the PRACTICE website:

**<http://www.practice-fp7-security.eu/>**

You are also welcome to contact:

**Dr. Brooke Rogers**  
(Brooke.Rogers@kcl.ac.uk) at  
King's College London  
or

**Dr. Richard Amlôt**  
(Richard.Amlot@phe.gov.uk) at  
Public Health England  
for additional information.



Public Health  
England

[PRACTICE]



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 261728